REMARKS

The application includes claims 110-129 prior to entering this amendment.

The examiner rejects claims 110-129 under 35 U.S.C. § 103(a) as being unpatentable over Applicant's Off-Site Server product as described in Applicant's admitted prior art and the Staheli, et al. reference (US Patent 5,537,533) and Cabrera, et al. (US Patent 6,453,325).

Claims 130-134 are new.

Claims 110-134 are pending.

The rejections are traversed.

Claim Amendments

Claims 130-134 are new. Support for the new claims may be found in the application as filed, for example, on pages 12-14, 27-28, and 32. No new matter has been added.

Claim Rejections - 35 U.S.C. § 103

Claim 110

Claim 110 recites that "the meta-data blocks indicating a time that data changes associated with the meta-data blocks were made on the storage volume relative to other data changes."

The Examiner cited the chronological mark, timestamp, or log sequence number associated with a backup copy of a database from Cabrera as the meta-data blocks. However, these chronological marks indicate "the time that the copy was made." Cabrera, col. 18, ll. 49-50 (emphasis added). Thus, the chronological marks of Cabrera only indicate when the backup copy was made, not when a change to the database was made. In contrast, the meta-data blocks of claim 110 indicate a time the associated data changes were made.

In addition, the Examiner has not articulated a reason why the chronological marks of Cabrera would be changed to indicate a time the associated data changes were made as in claim 110. Even though the Examiner has stated that properly determining backups to use in restoring a system as the reason for using the chronological marks of Cabrera, this is not a reason to change the chronological marks of Cabrera to indicate a time the associated data changes were made to the storage volume.

Furthermore, one skilled in the art would not replace the checksum of Staheli with the chronological mark of Cabrera. The checksum of Staheli is used for error checking of a packet over the communications link 50. Staheli, col. 12, ll. 40-43. In contrast, the cited chronological mark of Cabrera is on the entire database. Once skilled in the art would not store an entire data base and its chronological mark in the same buffer as a packet immediately prior to transmission. Even if the log record is interpreted as a data change there is no reason that the processor that calculates the checksum of Staheli would be used to put a chronological mark in a log record.

Accordingly, even if Cabrera is combined with the Off-Site Server product, Staheli, or the combination of the two, the combination does not render claim 110 obvious.

Claim 116

Claim 116 includes "a remote buffer coupled to the communications link and configured to receive and store the data changes and the associated meta-data blocks from the local buffer; and a remote mirror including all of the data stored on the storage volume at a current point in time; and a snapshot, wherein the snapshot includes all data of the storage volume at an associated point in time; wherein the remote buffer is configured to independently update the snapshot and the remote mirror using the data changes."

Thus, in claim 116, not only are there both a remote mirror and a snapshot, but the remote buffer can independently update both the remote mirror and snapshot using the data changes.

The Examiner cited Cabrera as the snapshot of claim 116. However, there is no indication that the snapshot of Cabrera is updated. In contrast, the snapshot is merely used to restore the database. Cabrera, col. 18, ll. 55-64. Furthermore, the Examiner has given no reason why the snapshot of Cabrera would be updated by a remote buffer, let along being updated at all.

Accordingly, the combination of the Off-Site Server product, Staheli, and Cabrera does not render claim 116 or dependent claims 117 and 118 obvious.

New Claims 130-134

New claims 130-132 focus on data changes of blocks of a storage volume. In contrast, Cabrera focuses on database snapshots and log records. There is no indication that the database

of Cabrera or the log records are on a storage volume block level. Accordingly, claims 130-132 are allowable over the combination of the Off-Site Server product, Staheli, and Cabrera.

New claims 133-134 introduce that the interface is a standard storage subsystem bus interface and the data changes are write requests received through that interface. In contrast, the database of Cabrera focuses on the file level. See Cabrera, col. 18, l. 65 to col. 19, l. 25, for example. Accordingly, claims 130-132 are allowable over the combination of the Off-Site Server product, Staheli, and Cabrera.

Claim 126

In the rejection of claim 126, the Examiner indicated that increasing redundancy to increase reliability was the reason to modify the "Applicant's admitted prior art system." The Examiner is reminded that "In determining the differences between the prior art and the claims, the question under 35 U.S.C. 103 is not whether the differences themselves would have been obvious, but whether the claimed invention as a whole would have been obvious." MPEP 2141.02 (I.) Furthermore, "distilling an invention down to the "gist" or "thrust" of an invention disregards the requirement of analyzing the subject matter "as a whole."" MPEP 2141.02 (II.)

By focusing only on the plurality of hosts and mirroring units, the Examiner has distilled the invention down to a gist, rather than analyzing the subject matter as a whole. For example, the Examiner has not addressed why or how primary storage volumes of multiple hosts are mirrored through respective first mirroring units to a single second mirroring unit.

Furthermore, the Examiner is apparently disregarding the explicit teachings on which the Examiner is relying. In the rejection of dependent claim 127, the Examiner quotes the Applicant's specification stating that "each server can only mirror a single server at a given time." "Multiple servers at different locations cannot readily mirror to a single remote site." See specification, p, 4, ll. 12-16. Accordingly, one skilled in the art would understand that the Off-Site Server product described is either not capable of or not desirable for mirroring different locations to one remote site.

The Examiner is reminded that "A prior art reference must be considered in its entirety, i.e., as a whole, including portions that would lead away from the claimed invention." MPEP 2141.02 VI. Prior Art Must Be Considered In Its Entirety, Including Disclosures That Teach Away From The Claims.

Moreover, Staheli is merely describing the Off-Site Server product. "The Off-Site Server boxes are configured … as described in U.S. Patent No. 5,537,533." Application, p. 2, ll. 9-11. Thus, the disclosure of Staheli is also not capable of mirroring multiple locations to a single remote site.

Accordingly, the combination of the Off-Site Server product, Staheli, and Cabrera does not render claim 126 or dependent claims 127-129 obvious.

Conclusion

For the foregoing reasons, reconsideration and allowance of claims 110-134 of the application as amended is requested. The Examiner is encouraged to telephone the undersigned at (503) 222-3613 if it appears that an interview would be helpful in advancing the case.

Respectfully submitted,

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